

ABSTRACT

There are provided a high silicon stainless steel with a high elongation at break, a spring made thereof, and a process for manufacturing the high silicon stainless steel. The high silicon stainless steel of the invention is characterized in: mainly comprising a microstructure with a grain size of 15 μm or less and having an elongation at break of 12% or higher; mainly comprising a microstructure with a grain size of 7 μm or less and having an elongation at break of 14% or higher; or having an elongation at break of 7% or higher after thermal aging. The process of the invention for manufacturing the high silicon stainless steel is characterized in comprising a load application step for applying an impact load and/or a static load to the high silicon stainless steel or the master alloy, wherein the surface temperature is in a temperature range of 950°C or below and not so low as to break the high silicon stainless steel or the master alloy. The high silicon stainless steel with a high elongation at break can provide a long-life spring.